Proceedings of the 52nd Meeting of the Project Approval Committee (PAC) of Technology Mission on Coconut held at Kochi on 14th January 2019

The 52nd meeting of the Project Approval Committee (PAC) of Technology Mission on Coconut was held in the Board Room of Coconut Development Board, Kochi on **14th January 2019**. The meeting started at 11AM. Dr. Raju Narayana Swamy IAS, Chairman, Coconut Development Board and Chairman PAC presided over the meeting. At the outset Chairman welcomed all the members of PAC.Thereafter agenda items were taken up one by one. The list of participants is enclosed as ***Annexure-I***.

AGENDA No. 1: Confirmation of the Proceedings of the 51st Project Approval Committee Meeting held on 19th January 2018

The Committee confirmed the proceedings of the 51st Project Approval Committee meeting held on 19.01.2018**.**

AGENDA No. 2: Action Taken Report on Decisions of the 51st PAC Meeting

Noted

AGENDA No. 3: New Project Proposals:

1. **Development of Potentially Viable Coconut Value Added Products- Tamil Nadu Agricultural University, Coimbatore**

The objectives of the project are as follows:

1. To standardize the technology for the production of tender coconut kernel leather.
2. To spray dry the coconut water from copra to reduce wastage.
3. To study the physico chemical changes during storage with suitable packaging materials.

PAC perused the recommendations of the ISC and observed that the PI may concentrate on the first objective viz. standardizing the technology for the production of tender coconut kernel leather and rework the project cost accordingly. Cost of each item mentioned under the consumables head should be given in split up. Consumables are on higher side and nonrecurring contingencies need to be reviewed. Project duration should be reduced. **PAC decided that as and when the revised project is received (rectifying**

the aforesaid defects as well as incorporating the observations of ISC) the same may be resubmitted for consideration of PAC.

2. **Smart Packaging Intervention to Enhance the Quality and Shelf Life of Infrared Dried Coconut Products- ICAR- Central Institute of Fisheries Technology, Kochi,**

The objectives of the project are as follows:

1. To design and develop energy efficient hot air assisted infrared dryer for coconut products.
2. To optimize drying conditions for coconut products in hot air assisted infrared dryer and to compare the quality of products with traditional methods.
3. To assess the effect of different packaging material on the quality and shelf life of dried coconut products.
4. To study quality and shelf life enhancement of dried coconut products and coconut oil packed using oxygen scavenger.

PAC perused the recommendations of the ISC and after detailed discussions came to the conclusion that the project need not be considered for funding under TMoC and **did not approve the project for funding.**

3. **Development of Sensory Lexicon for Selected Coconut Based Products- CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. Development of Sensory Lexicon for selected Coconut based Products.
2. Examining various value added products from Coconut processing, for sensory attributes Using Descriptive Sensory Analysis.
3. Identifying clear and specific terminology for each sensory quality characteristic of the selected products.
4. Defining each sensory attribute with a simple and easily understandable statement along with a reference sample.
5. Correlating the specific terminologies with the characteristic chemical compound, using instrumental measures.

PAC perused the recommendations of the ISC and **approved the project with a total project cost of Rs. 10.45 lakh with a project period of two years.**

4. **Development of Coconut based products for sustenance in sports- CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. To develop Coconut based food products for sustenance in sports.
2. To monitor the levels of bio-actives during prolonged storage.
3. Sensory analysis and nutritional labeling of the developed product.
4. Field studies to evaluate the efficacy of the product at a sports complex.
5. To transfer the developed technology to an industry for commercialization.

PAC perused on the recommendations of the ISC and **approved the project with a total project cost of Rs. 25.25 lakh with a project period of three years subject to the following conditions:-**

(a) Equipments like homogenizer need to be provided by CFTRI and gadgets used in the project must be specifically mentioned.
(b) Institutional charges shall be limited to 10% of the recurring charges.

5. Development of shelf-stable coconut sap (*Neera*) in rigid and flexible packages- CSIR-Central Food Technological Research Institute, Mysuru.

The objectives of the project are as follows:

1. Exploring the possibility of collecting coconut sap without cold chain.
2. Technology for processing of coconut sap (*neera*) in flexible spouted stand-up pouches and flip-open rigid cans (200 ml) with extended shelflife (minimum 60 days).

PAC perused the recommendations of the ISC and after detailed discussion came to the conclusion that the project need not be considered for funding under TMoC and **did not approve the project for funding.**

6. **Development of a process for preparing synbiotic beverage using mature coconut water-CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. To develop a functional beverage using mature coconut water.
2. Selection of suitable probiotic strains for preparation of the beverage.
3. To select suitable prebiotics for fortification with the beverage.
4. Sensory analysis and nutritional labeling of the developed product.

5. Nutritional studies of the developed synbiotic beverage.
6. Shelf life studies of the synbiotic beverage.
7. To-transfer the developed technology to an industry for commercialization

PAC perused the recommendations of the ISC and after detailed discussion came to the conclusion that the project need not be considered for funding under TMoC and **did not approve the project for funding.**

7. **Shelf life increase of Neera – a process for small and village scale production-CSIR-Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. To develop minimum intervention methods for increasing the shelf life of Neera to 3 days.
2. To make the process simple but efficient for micro scale producers to preserve neera.

PAC perused the recommendations of the ISC and after detailed discussion came to the conclusion that the project need not be considered for funding under TMoC and **did not approve the project for funding.**

8. **Accelerated production of mature coconut water Vinegar- CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. To accelerate the process of vinegar production from 4-6 weeks to 10-15 days.
2. To produce a consistently similar product with defined cultures and process.

PAC perused the recommendations of the ISC and requested the PI to rework on the total project cost to limit the institutional charges to 10% of the Recurring charges and to furnish the details of consumables. **Non recurring contingencies need to be reviewed and the duration of the project need to be limited to 18 months. PAC decided that as & when the revised project is received (rectifying the aforesaid defects as well as incorporating the observations of ISC) the same may be resubmitted for consideration of PAC.**

9. **Development of a Process for Fractionation of Virgin Coconut Oil (VCO) to obtain Medium Chain triglycerides (MCTs) and other Fractions-CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. Characterization of the raw material: Physico- chemical, functional and nutraceutical properties of the conventionally produced coconut oil and extracted virgin coconut oil.

2. Formulation and standardisation of two MCTs based products (beverage mix and chocoloates) and studies of their physic chemical characteristics, sensory quality and storage stability of prepared products.

3. Identification of suitable process/methodology for isolation of MCTs from virgin coconut oil using thermal and non-thermal process and evaluation of physico-chemical and biochemical properties of MCTs and other fractions.

4. Scale- up/ large scale trials of the process for the separation of MCTs from VCO, and demonstration and transfer of technology.

PAC perused the recommendations of the ISC and **decided to defer the project.**

10. **Characterization and biological effects of Unsaponifiable matter in Conventional and Cold Pressed Virgin Coconut Oil-CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. To prepare unsaponifiable matter from commercial (CO) and virgin coconut oil (VCO)
2. To analyse various nutraceuticals from unsaponifiable matter of CO and VCO
3. To assess the *in-vitro*biological activities of unsaponifiable matters in both the oils.

PAC perused the recommendations of the ISC and after detailed discussion came to the conclusion that the project need not be considered for funding under TMoC and **did not approve the project for funding.**

11. **Development of fermented tender coconut water with lactic cultures and its functional applications-CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. To optimize different cultural conditions for the fermentation of tender coconut water with lactic acid bacterial cultures.
2. To extract and analyse various biochemical compounds from the fermented product.
3. To study antimicrobial activities of fermented product (FP)
4. Preparation of FP based food product utilising fermented coconut water for targeted ailment.

PAC perused the recommendations of the ISC and suggested to reduce the project duration and to cut down the cost at consumables and to mention them specifically in the project. Further PAC also informed the PI to ascertain the cost of equipment particularly cooling centrifuge on actual basis and to rework the total project cost accordingly. **PAC decided that as & when the revised project is received (rectifying the aforesaid defects) the same may be resubmitted for consideration of PAC.**

12. **Continuous Production of Coconut Oil and Coconut Milk Powders using Refractance Window Drying Technique- Indian Institute of Food Processing Technology, Thanjavur**

The objectives of the project are as follows:

1. Development of continuous type refractance window in drying system.
2. Optimization of process parameters for the production of coconut oil powder and coconut milk powder in the developed unit.
3. Quality evaluation and comparison against conventional drying approaches.

PAC perused the recommendations of the ISC and **decided to defer the project.**

13. **Development of innovative coconut products for improving livelihood of coconut farmers- Indian Institute of Food Processing Technology,Thanjavur**

The objectives of the project are as follows:

1. To standardize production process techniques for primary and secondary value added products from coconut.
2. To evaluate the physico-chemical and organoleptic properties of formulated value added coconut products.
3. To study commercial viability of developed products through pilot scale production and popularize developed processing techniques through technology transfer programme.

PAC perused the recommendations of the ISC and **decided to defer the project.**

14. **Development of Sensors for Quality Evaluation of Coconut Oil- Indian Institute of Food Processing Technology, Thanjavur**

The objectives of the project are as follows:

1. To develop amphrometric biosensor for the confirmative test of Virgin Coconut Oil(VCO)
2. To develop a capacitive type sensor for the detection of Peroxide value (PV) of Coconut Oil.
3. Validation of the developed sensors with conventional methods

PAC perused the recommendations of the ISC and **decided to defer the project.**

15. **CDB-IIFPT Common Incubation Facility for Production of Virgin Coconut Oil and its Value added Products to Increase Coconut Farmer's Income- Indian Institute of Food Processing Technology, Thanjavur**

The objectives of the project are as follows:

1. To set up a complete line for Virgin Coconut Oil Processing and Packaging.
2. To extend the VCO processing lines with subsequent lines for preparation of value added products from the residual cake of VCO.
3. To extend the benefits to stakeholders and farmers by conducting trainings and opening up the line for incubation services.

PAC perused the recommendations of the ISC and **decided to defer the project.**

16. **Effect of Virgin Coconut Oil on Cardiometabolic Parameters in Patients with Dyslipidemia: A Randomized, add- on, Placebo Controlled Clinical Trial- All India Institute of Medical Sciences, Bhubaneswar**

The objectives of the project are as follows:

1. To evaluate the change in serum lipoprotein levels over 8 weeks from baseline
2. To evaluate the change in cardiovascular risk indices (Atherogenic index, Coronary risk index, Cardiovascular risk index) over 8 weeks from baseline.
3. To evaluate the change in plasma Lipoprotein (a) levels over 8 weeks from baseline.
4. To evaluate the body fat composition over 8 weeks from baseline.
5. To evaluate change in lipid peroxidation over 8 weeks from baseline.

PAC perused the recommendations of the ISC and **approved the project with a total project cost of Rs. 20.41 lakh with a project period of two years.**

17. **Study the Efficacy of Virgin Coconut Oil in Preventing Oral Cancer in Patient with Oral Premalignant Lesion- All India Institute of Medical Sciences, Bhubaneswar**

The objectives of the project are as follows:

1. To determine the clinical response of oral premalignant lesions to 12 weeks of VCO intervention.
2. Histologic and molecular response to VCO intervention in the target lesion

PAC perused the recommendations of the ISC and **approved the project with a total project cost of Rs. 31.74 lakh with a project period of three years.**

18. **Improved Coconut Wood Canoes for Small Scale Fishing Sector of Southeast Coast of India-ICAR- Central Institute of Fisheries Technology, Kochi**

The objectives of the project are as follows:

1. To assess the ecotoxicity of biocides used for preservation of coconut wood on the aquatic environment.
2. To design and construct small scale fishing vessels for traditional Fishermen of southeast coast of India.
3. Performance evaluation of the experimental fishing vessels with coconut wood.

PAC perused the recommendations of the ISC and **approved the project with a total project cost of Rs. 34.72 lakh with a project period of three years.**

19. **Identification of bioactives from virgin coconut oil for the amelioration of Alzheimer related complications-CSIR- Central Food Technological Research Institute, Mysuru**

The objectives of the project are as follows:

1. Comparison of nutraceutical potential of Virgin coconut oil extracted using the process developed at CSIR-CFTRI with commercially available samples of virgin coconut oil and regular coconut oil

2. Evaluation of virgin coconut oil for its antioxidative potential and anti-inflammatory effects and studies of its bioavailability.
3. Influence of VCO fractions on the amelioration of Alzheimer's disease in clinical trials.

PAC perused the recommendations of the ISC and **decided to defer the project.**

20. **Robotic Based Automatic Coconut Harvesting System-Indian Institute of Food Processing Technology, Thanjavur**

The objectives of the project are as follows:

1. Robotic based Automatic Coconut Harvesting System includes robotic arm, flying or tree climbing robotic system, wireless control system and Cutting system will be designed and developed.
2. Performance evaluation of the developed system in comparison with existing approaches in terms of efficiency and cost effectiveness.
3. Dissemination of the technology to farmers and stakeholders.

PAC perused the recommendations of the ISC and observed that a technology partner of the stature of Indian Institute of Science, Bangalore is desirable. Moreover salary expenses & non recurring expenses are on the higher side. Institutional charges need to be limited to 10% of the recurring charges. The breakup of the budget for each year needs to be provided. **PAC decided that as & when the revised project is received (rectifying the aforesaid defects) the same may be resubmitted for consideration of PAC.**

21. **Project proposal for tender coconut vending cart &coconut ice-cream vending machine- Dept of Agriculture, Govt of Tamil Nadu**

PAC discussed the project in detail and came to a conclusion that the project is worth undertaking as it will make a dent on the livelihood of the rural poor. However it cannot be undertaken as per the TMOC norms. Hence it was decided to address GOI rwequesting for special sanction to implement the project in relaxation of TMOC norms.

22. **Pest and Disease Surveillance on Coconut Palms by Unmanned Aerial Vehicles (UAV)- ICAR- Central Plantation Crops Research Institute, Kasargod**

The objectives of the project are as follows:

1. To develop an early detection system for surveillance of important diseases and pests of coconut palms using real time images captured through multispectral/ hyper spectral camera fitted to an UAV.

2. To determine the feasibility of real time spot delivery of biorationals/ bioagents to the pest or disease affected palms.
3. To validate data generated by UAV under real field condition.

PAC perused the recommendations of the ISC and **approved the project with a total project cost of Rs. 49.90 lakh with a project period of two years, subject to the following conditions:-**

(a) Institutional charges should be removed.
(b) CPCRI shall ensure that technology development under the project will have a joint patenting with CDB.
(c) Project funding shall be to CPCRI. CPCRI will ensure that all rules, formalities& procedures are followed in implementation & will execute MoU in format with their technological partner in the best interest of CDB & CPCRI.

23. **Integrated Management Techniques for Safe Storage of Copra-Indian Institute of Food Processing Technology, Thanjavur**

The objectives of the project are as follows:

1. To study the life cycle of red- legged ham beetle (N.*rufipes*) and other insects in copra and to access the quality and damage of copra during storage.
2. To develop and evaluate different techniques viz., Radio frequency, microwave, hot air and botanicals for management of insects and microbial contamination during processing and storage of copra.
3. To integrate the different effective techniques to develop Integrated Management System (IMS) and evaluate for safe storage of copra.
4. To disseminate the IMS through training, demonstration, conference and seminar to various stakeholders like farmers, coconut processors and traders.

PAC perused on the recommendations of the ISC and **decided to defer the project.**

24. **Establishment of Goniozus Parasitoid Breeding Lab- DSP Farm, Mandya, Karnataka**

The objective of the project is to establish a Parasite Breeding Lab for the Production of *Goniozus nephantidis* (12 lakh parasitoid) at DSP Farm , Mandya for controlling Black Headed caterpillar in coconut plantations. PAC observed that the title of the project may be changed as up gradation of the lab.

PAC discussed the project in detail and authorized Director, CFTRI to depute a technically competent person to inspect the lab and furnish a report. PAC decided to defer the project till the report is so received.

25. **Construction/Renovation of Parasite Production Lab to control Black Headed Caterpillar in Karnataka- Horticulture Department, Government of Karnataka**

The objectives of the project are as follows:

1. To control the Black Headed Caterpillar by increasing the production of parasites.
2. To distribute parasites free of cost to the farmers of affected coconut gardens.
3. To minimize the use of chemical pesticides.
4. To enhance the production and productivity of the crop by effective control of BHC.

PAC perused the recommendations of the ISC and noted that the reply of Govt. of Karnataka has not been received so far. PAC decided to defer the project till the report is so received.

The meeting concluded at 1:10 pm with vote of thanks by the chair.

This is issued with the approval of the Chairman, Coconut Development Board and Chairman, Project Approval Committee (TMOC).

Deputy Director
Coconut Development Board
Kochi

Annexure-I

A	Project Approval Committee
1	Dr. Raju Narayana Swamy IAS Chairman, Coconut Development Board & Chairman PAC
2	The Horticulture Commissioner Department of Agriculture & Cooperation Krishi Bhavan, New Delhi-110 001 **Represented by** Shri R R Sharma Assistant Commissioner (Hort) Krishi Bhavan, New Delhi-110 001
3	The Director Central Food Technological Research Institute,Mysore-570 020 **Represented by** Dr Raghavarao K S M S Director – Central Food Technological Research Institute (CFTRI) Council of Scientific and Industrial Research (CSIR)
4	Shri Ashok Kumar Nayar AGM, DDM Nabard Idukki **Representative of:** Chief General Manager, Technical Services Department, NABARD, Mumbai
5	The Managing Director & Chief Executive Officer Indian Overseas Bank 763, Anna Salai, Chennai-600 002 Ph: 044-28519500 **Represented by** Shri Philip Y. Chief Regional Manager, Indian Overseas Bank Regional Office, No.2384, Vettukattil Building, 5th Floor Jose Jn., M G Road, Ernakulam, Kochi

6	Shri. P.K. Hameedkutty Deputy Agri. Marketing Advisor Directorate of Marketing & Inspection (DMI), Regional Officer, Block 'A', 6th Floor, Kendriya Bhavan, Kakkanad, Kochi-682 037 **Representative of:** The Joint Secretary & Agri. Marketing Adviser to Govt. of India, Krishi Bhavan, New Delhi-110 001.
C	**Officials of CDB**
1	Shri. R. Madhu Secretary, CDB, Kochi
2	Dr. Rajat Kumar Pal Deputy Director, CDB, Kochi
3	Smt. Deepthi Nair. S. Deputy Director, CDB, Kochi
4.	Shri Sreekumar Poduval Processing Engineer, CIT, Vazhakulam, Aluva
5	Smt. Radha P.G. Audit Officer, CDB, Kochi
6.	Shri P. Sabareenathan Finance Officer, CDB, Kochi
7.	Shri V.C.Vasanthkumar Statistical Officer, CDB, Kochi
8	Smt. Mini Mathew Publicity Officer
9	Smt. Jayashree A. Development Officer, CDB, Kochi
10.	Kum. Sharon Mariam Jacob Processing Engineer (on contract, CDB, Kochi)
11.	Kum. Ciby Susan Cherain Processing Engineer (on contract, CDB, Kochi)